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Red Hat Enterprise Linux Release 9.2 Manual Pages on 'nanosleep.3p' command

$ man nanosleep.3p

NANOSLEEP(3P) POSIX Programmer's Manual NANOSLEEP(3P)

PROLOG

This manual page is part of the POSIX Programmer's Manual. The Linux implementation of this interface may differ (consult the corresponding Linux manual page for details of Linux behavior), or the interface may not be implemented on Linux.

NAME

nanosleep ? high resolution sleep

SYNOPSIS

#include <time.h>

int nanosleep(const struct timespec *rqtp, struct timespec *rmtp);

DESCRIPTION

The nanosleep() function shall cause the current thread to be suspended from execution until either the time interval specified by the rqtp ar? gument has elapsed or a signal is delivered to the calling thread, and its action is to invoke a signal-catching function or to terminate the process. The suspension time may be longer than requested because the argument value is rounded up to an integer multiple of the sleep reso? lution or because of the scheduling of other activity by the system. But, except for the case of being interrupted by a signal, the suspen? sion time shall not be less than the time specified by rqtp, as mea? sured by the system clock CLOCK_REALTIME.

The use of the nanosleep() function has no effect on the action or

blockage of any signal.

RETURN VALUE

If the nanosleep() function returns because the requested time has elapsed, its return value shall be zero.

If the nanosleep() function returns because it has been interrupted by a signal, it shall return a value of -1 and set errno to indicate the interruption. If the rmtp argument is non-NULL, the timespec structure referenced by it is updated to contain the amount of time remaining in the interval (the requested time minus the time actually slept). The rqtp and rmtp arguments can point to the same object. If the rmtp argu? ment is NULL, the remaining time is not returned.

If nanosleep() fails, it shall return a value of -1 and set errno to indicate the error.

ERRORS

The nanosleep() function shall fail if:

EINTR The nanosleep() function was interrupted by a signal.

EINVAL The rqtp argument specified a nanosecond value less than zero or greater than or equal to 1000 million.

The following sections are informative.

EXAMPLES

None.

APPLICATION USAGE

None.

RATIONALE

It is common to suspend execution of a thread for an interval in order to poll the status of a non-interrupting function. A large number of actual needs can be met with a simple extension to sleep() that pro? vides finer resolution.

In the POSIX.1?1990 standard and SVR4, it is possible to implement such a routine, but the frequency of wakeup is limited by the resolution of the alarm() and sleep() functions. In 4.3 BSD, it is possible to write such a routine using no static storage and reserving no system facili? ties. Although it is possible to write a function with similar func?

tionality to sleep() using the remainder of the timer_*() functions, such a function requires the use of signals and the reservation of some signal number. This volume of POSIX.1?2017 requires that nanosleep() be non-intrusive of the signals function.

The nanosleep() function shall return a value of 0 on success and -1 on failure or if interrupted. This latter case is different from sleep().

This was done because the remaining time is returned via an argument structure pointer, rmtp, instead of as the return value.

FUTURE DIRECTIONS

None.

SEE ALSO

clock_nanosleep(), sleep()

The Base Definitions volume of POSIX.1?2017, <time.h>

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